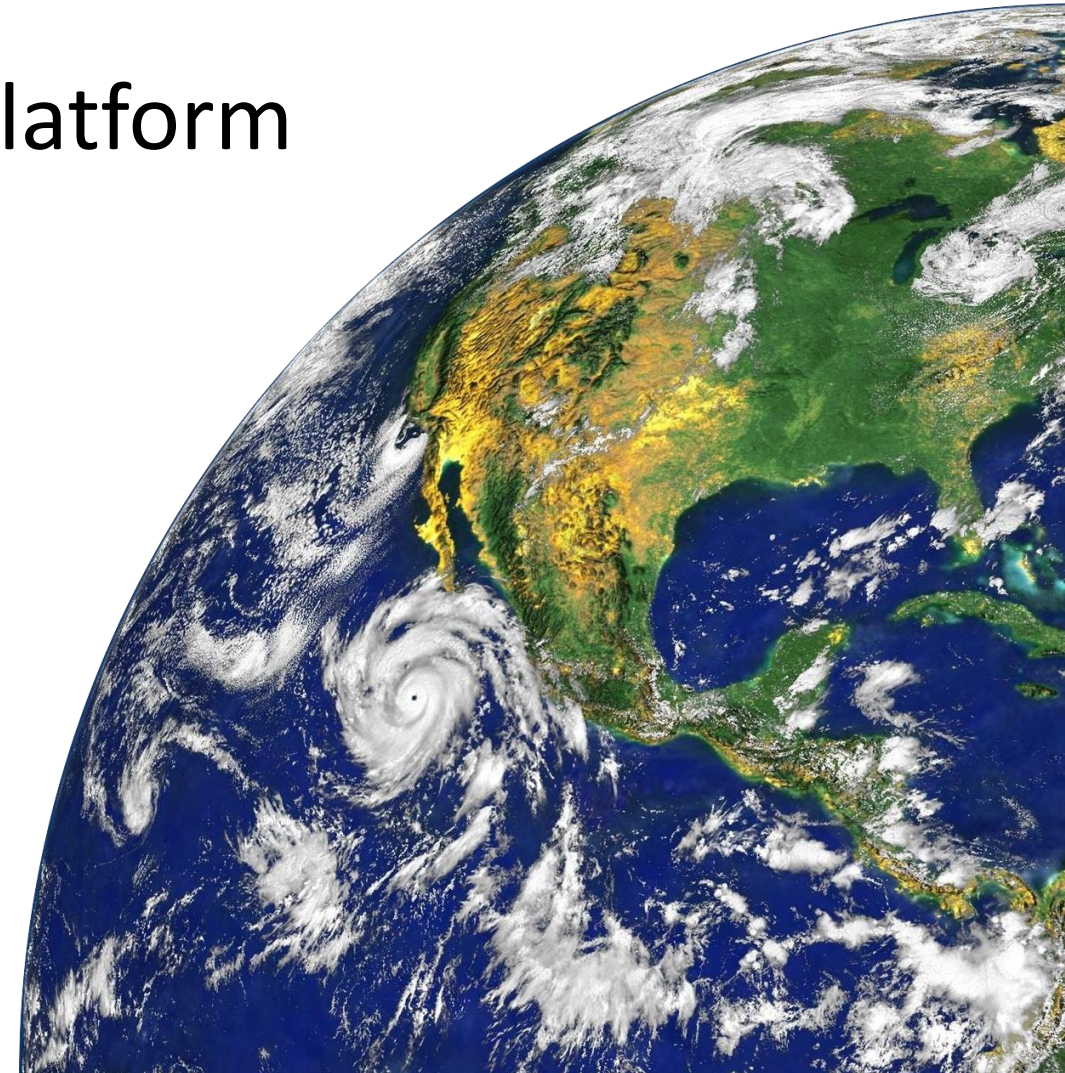
Federal Office of Metrology and Surveying

IUGG

IAG GGOS Global Geodetic Observing System

GGOS Portal

Advances in the future metadata platform for geodetic data andproducts



Martin Sehnal (1) and Lena Steiner (1, 2)

(1) BEV, Federal Office of Metrology and Surveying - Austria
(2) TU Wien, Department of Geodesy and Geoinformation, Research unit Higher Geodesy - Austria

GGOS Days 2024
Friday, October 11, 2024
Potsdam, Germany

Why do we need a GGOS Portal?

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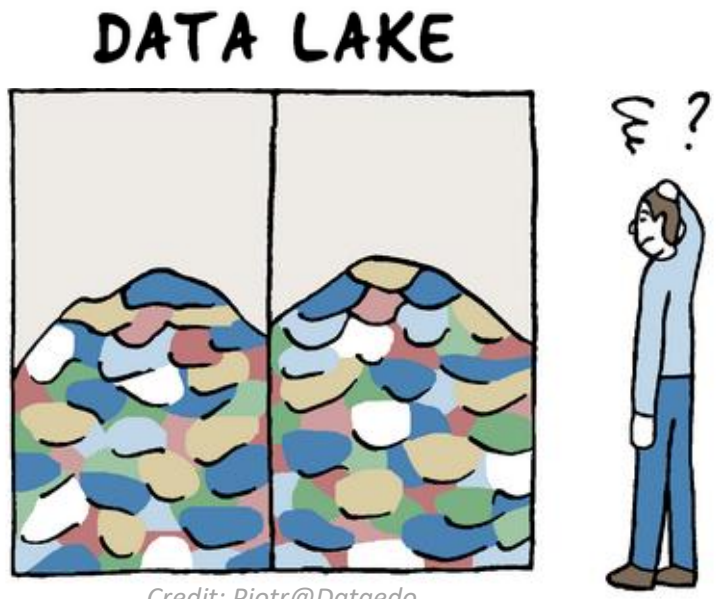
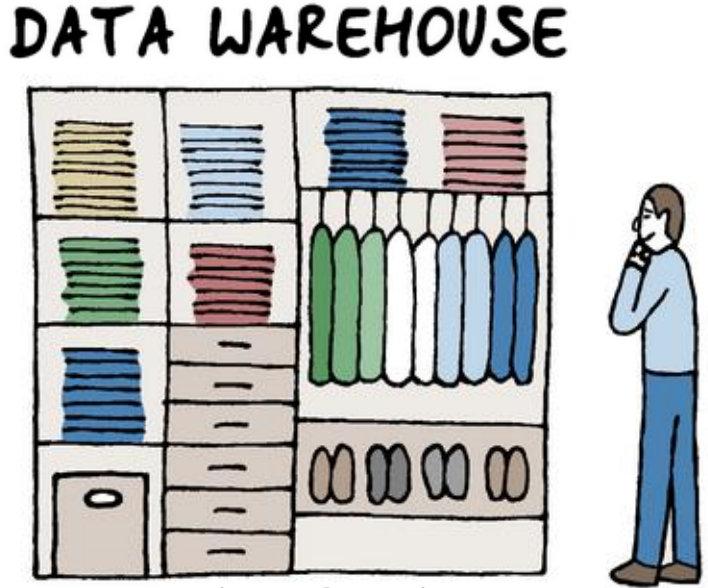
Global Geodetic Observing System



Credit: Piotr@Dataedo



Credit: Piotr@Dataedo

ISG IGETS PSMSL iDEMS IGS INTERNATIONAL GNSS SERVICE IDS ICGEM IVS International Laser Ranging Service COST-G Combination Service for Time-variable Gravity Fields

GGOS Portal

How does it work?

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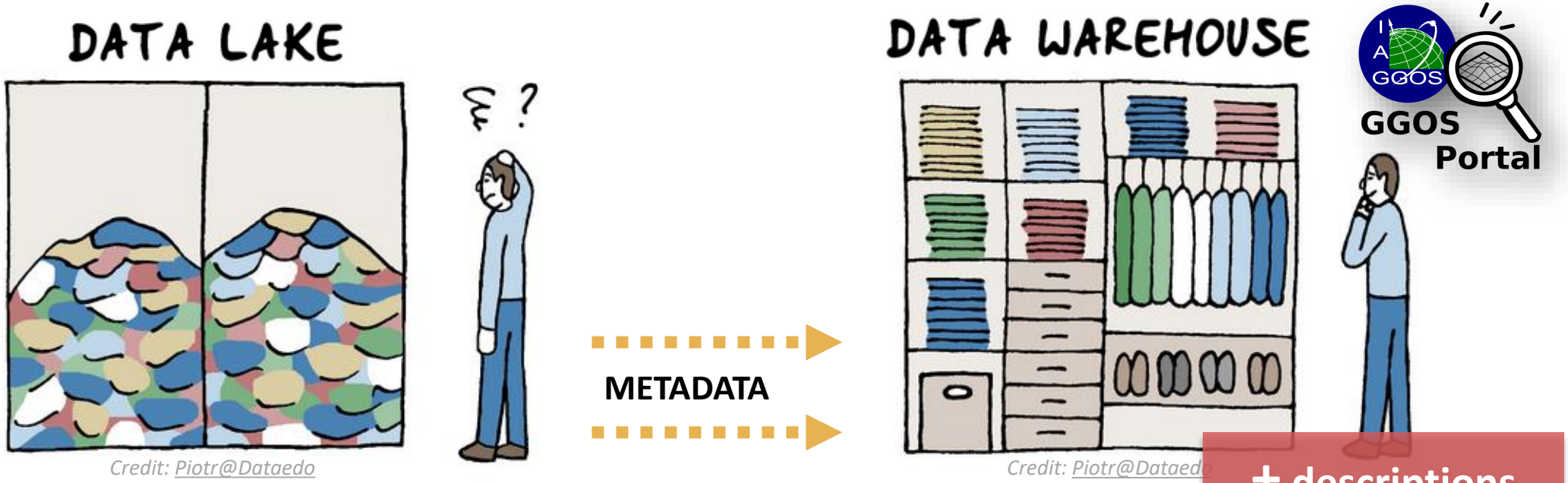

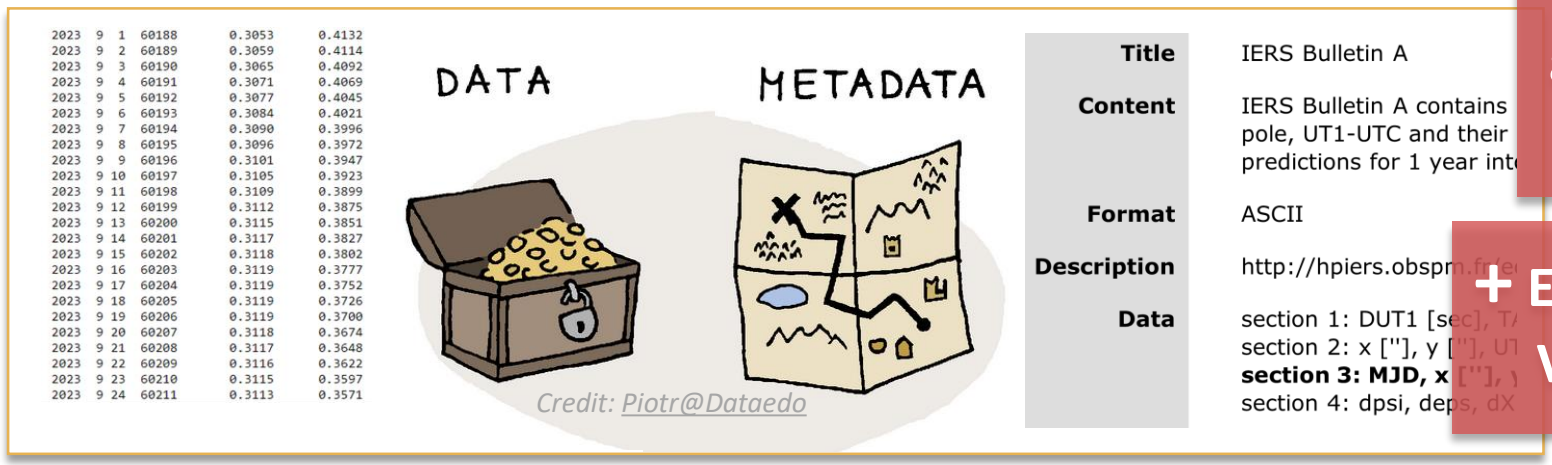

+ descriptions about techniques and products

+ Essential Geodetic Variables (EGV)

How does it work?

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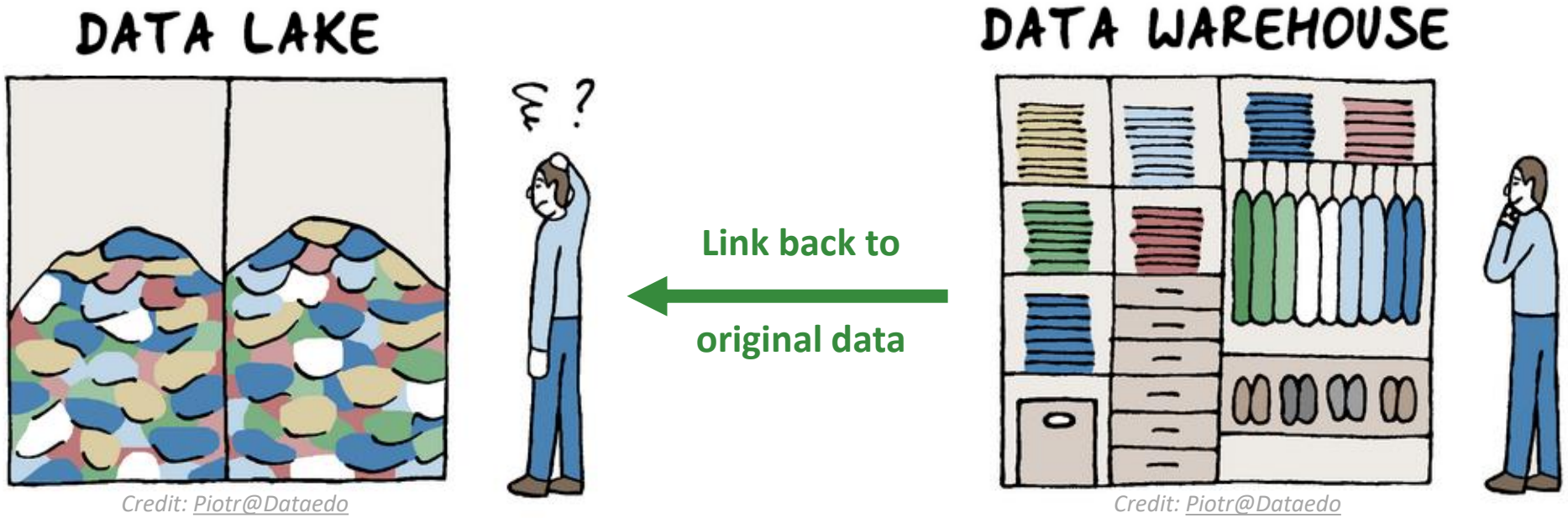

Credit: Piotr@Dataedo

Credit: Piotr@Dataedo

*„A **unique acces point***

*for all **data, products and information***

*relevant in the **framework of GGOS***

*for **Earth Science and applications**”*

GGOS Portal

History of GGOS Portal

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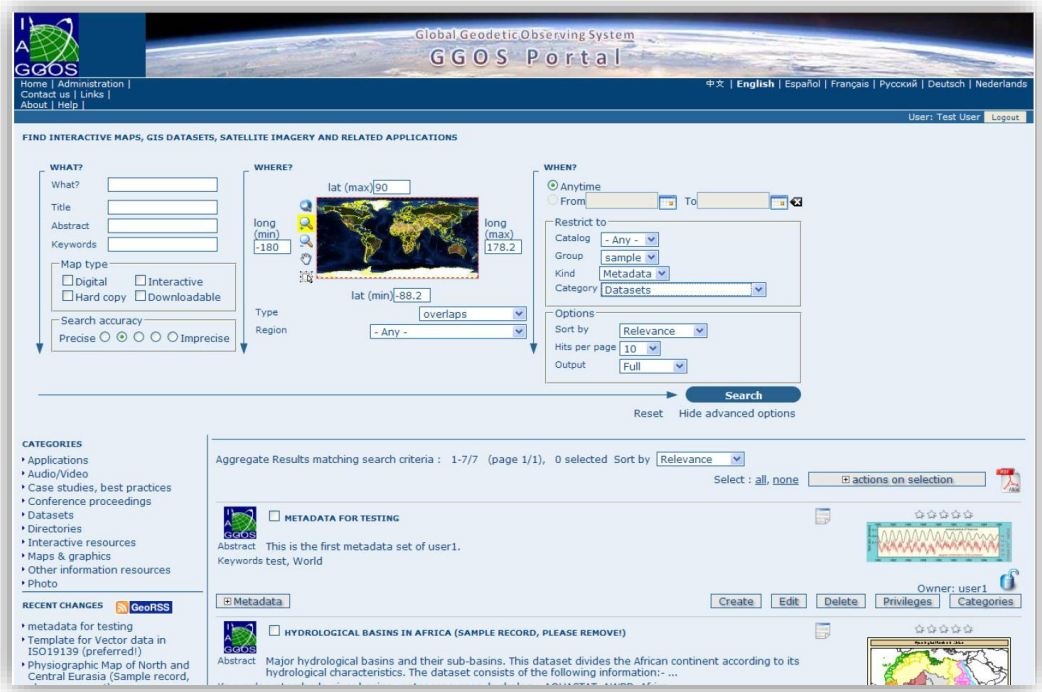
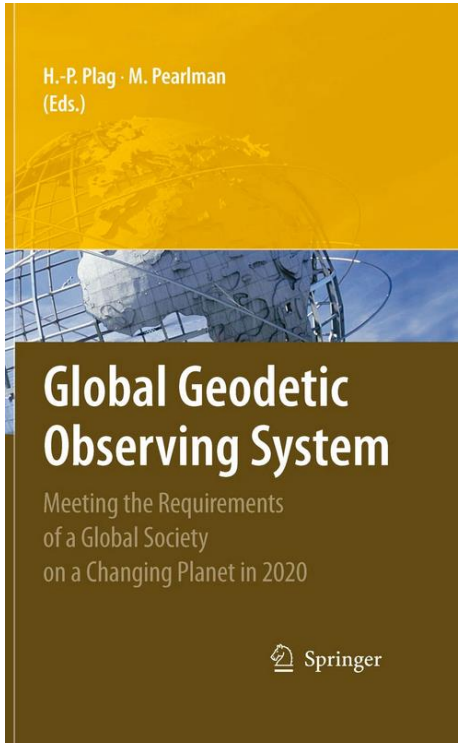
Global Geodetic Observing System

- 2007: **First idea** -> written down in GGOS Book
- 2009-2011: **First prototype** -> developed at BKG, Germany
- 2012: **Stop** of developments



GGOS-Portal Screenshot – IAG Travaux Report 2007-2011



Chapter about the GGOS Portal in the "GGOS Book" DOI: 10.1007/978-3-642-02687-4_9

History of GGOS Portal

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Global Geodetic Observing System

- 2022: Idea to **revive** the GGOS Portal
- **2023: Community survey**
  Feasability study

GGOS Portal
ggos.org/portal

Community Survey – USER Perspective

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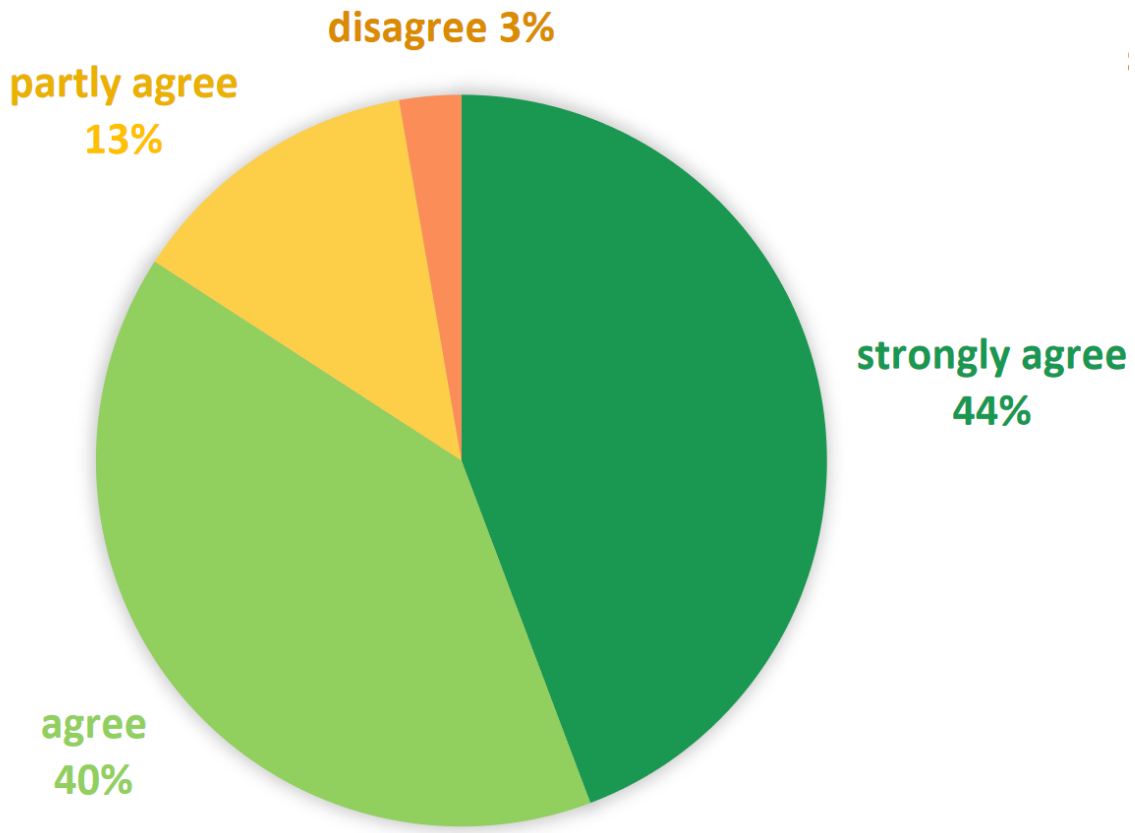
Do you agree that **a central point of access for geodetic data & products is missing?**



GGOS Portal Survey Results
ggos.org/portal

Community Survey – DATA PROVIDER

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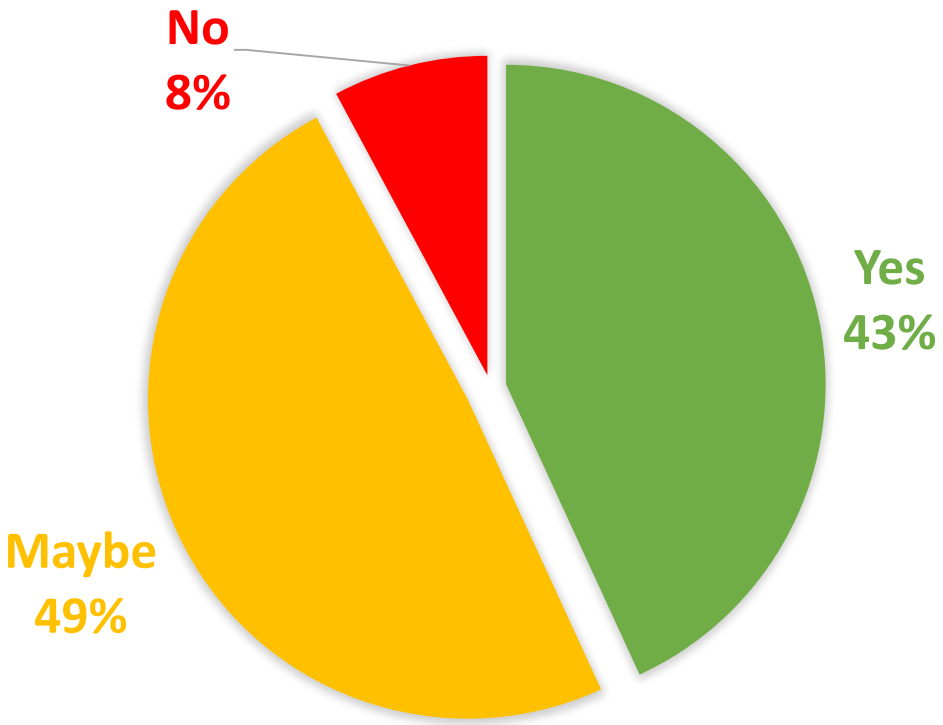
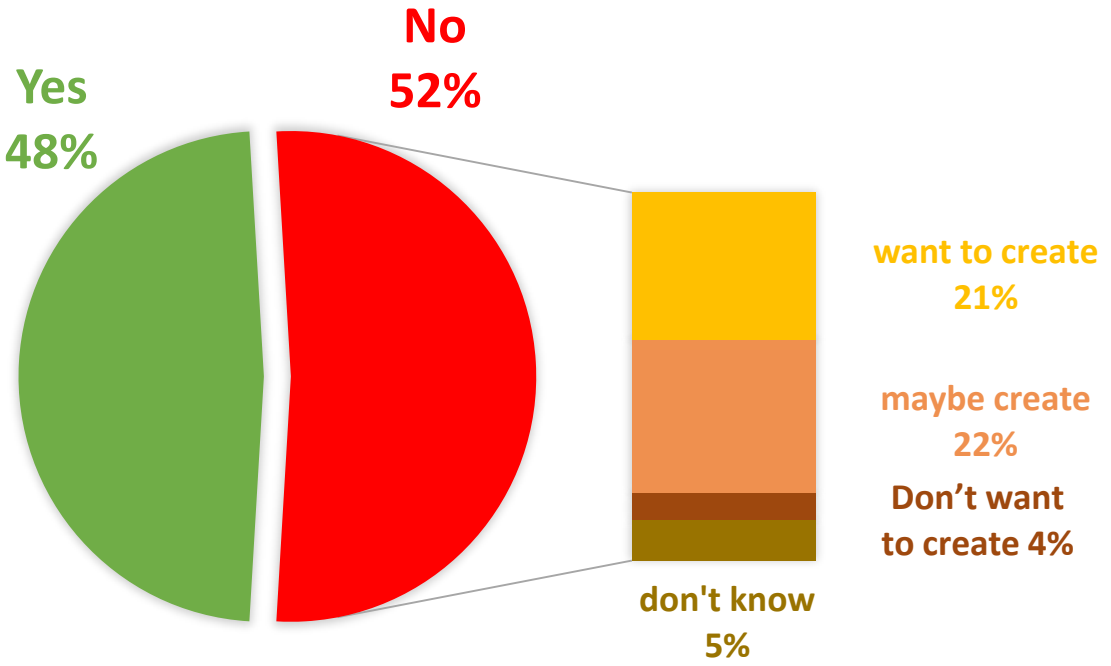
Interest on publishing data at GGOS Portal?



Current availability of metadata?



GGOS Portal
Survey Results
ggos.org/portal

Community Survey – CHALLENGES

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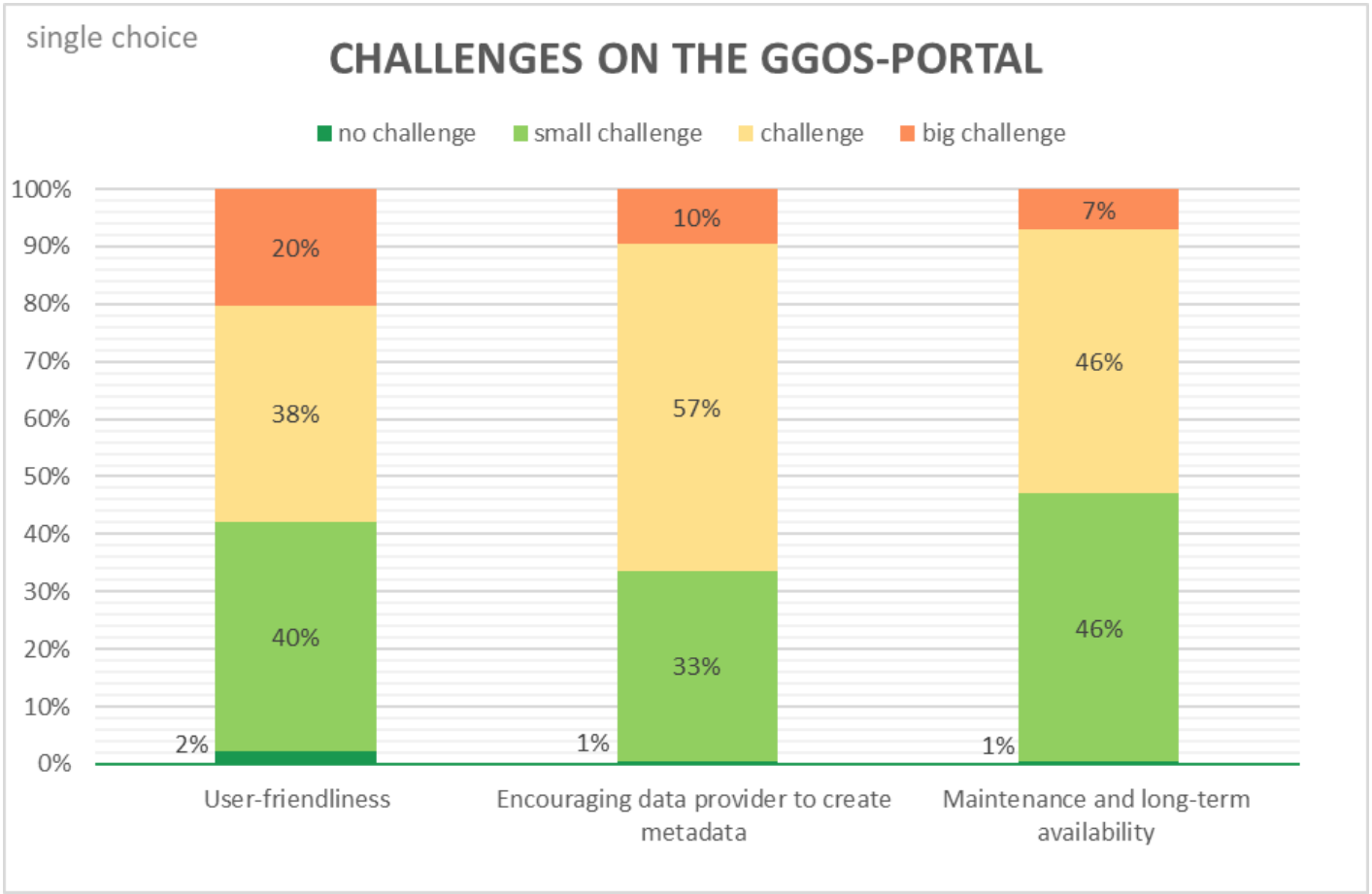
- **User friendlyness**
- **Encourage data provider**
  to create metadata



GGOS Portal Survey Results
ggos.org/portal

Feasibility Study

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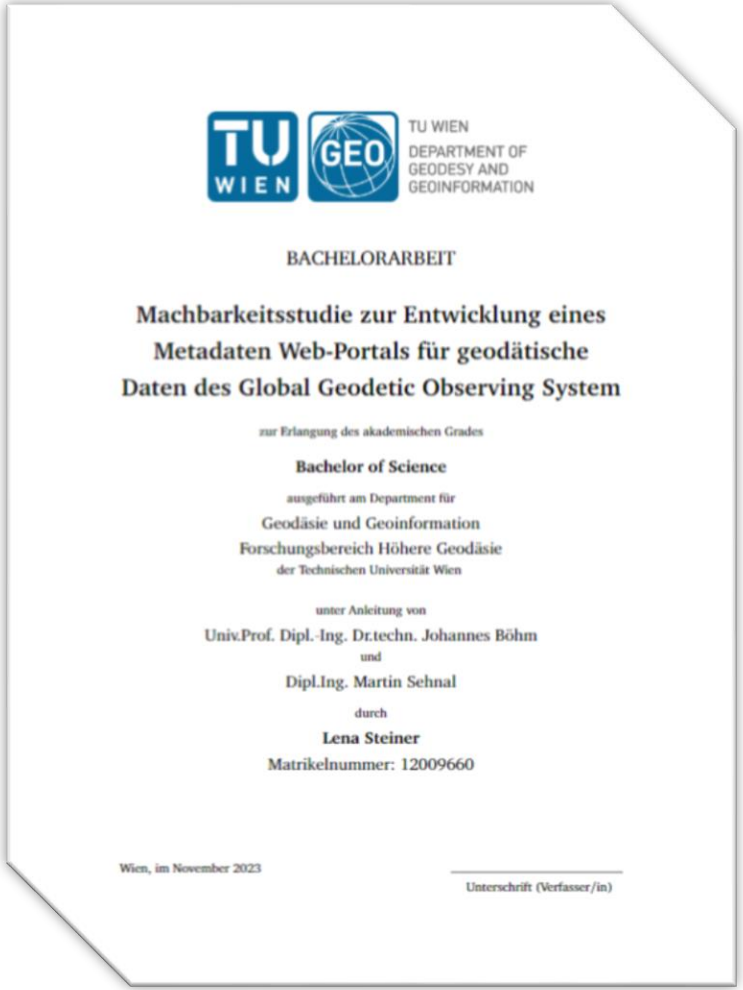
- Carried out in 2023
- By Lena Steiner (Bachelor Thesis, German only!)
- Cooperation: TU Wien – BEV

TU WIEN TECHNISCHE UNIVERSITÄT WIEN Vienna University of Technology

Federal Office of Metrology and Surveying



TU WIEN GEO TU WIEN DEPARTMENT OF GEODESY AND GEOINFORMATION

BACHELORARBEIT

Machbarkeitsstudie zur Entwicklung eines Metadaten Web-Portals für geodätische Daten des Global Geodetic Observing System

zur Erlangung des akademischen Grades

Bachelor of Science

ausgeführt am Department für

Geodäsie und Geoinformation

Forschungsbereich Höhere Geodäsie

der Technischen Universität Wien

unter Anleitung von

Univ.Prof. Dipl.-Ing. Dr.techn. Johannes Böhm

und

Dipl.Ing. Martin Sehnal

durch

Lena Steiner

Matrikelnummer: 12009660

Wien, im November 2023

Unterschrift (Verfasser/in)

Bachelor Thesis: Steiner L. (2023)
DOI: 10.5281/ zenodo.10255995

SOFTWARE PACKAGE

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Global Geodetic Observing System

ckan

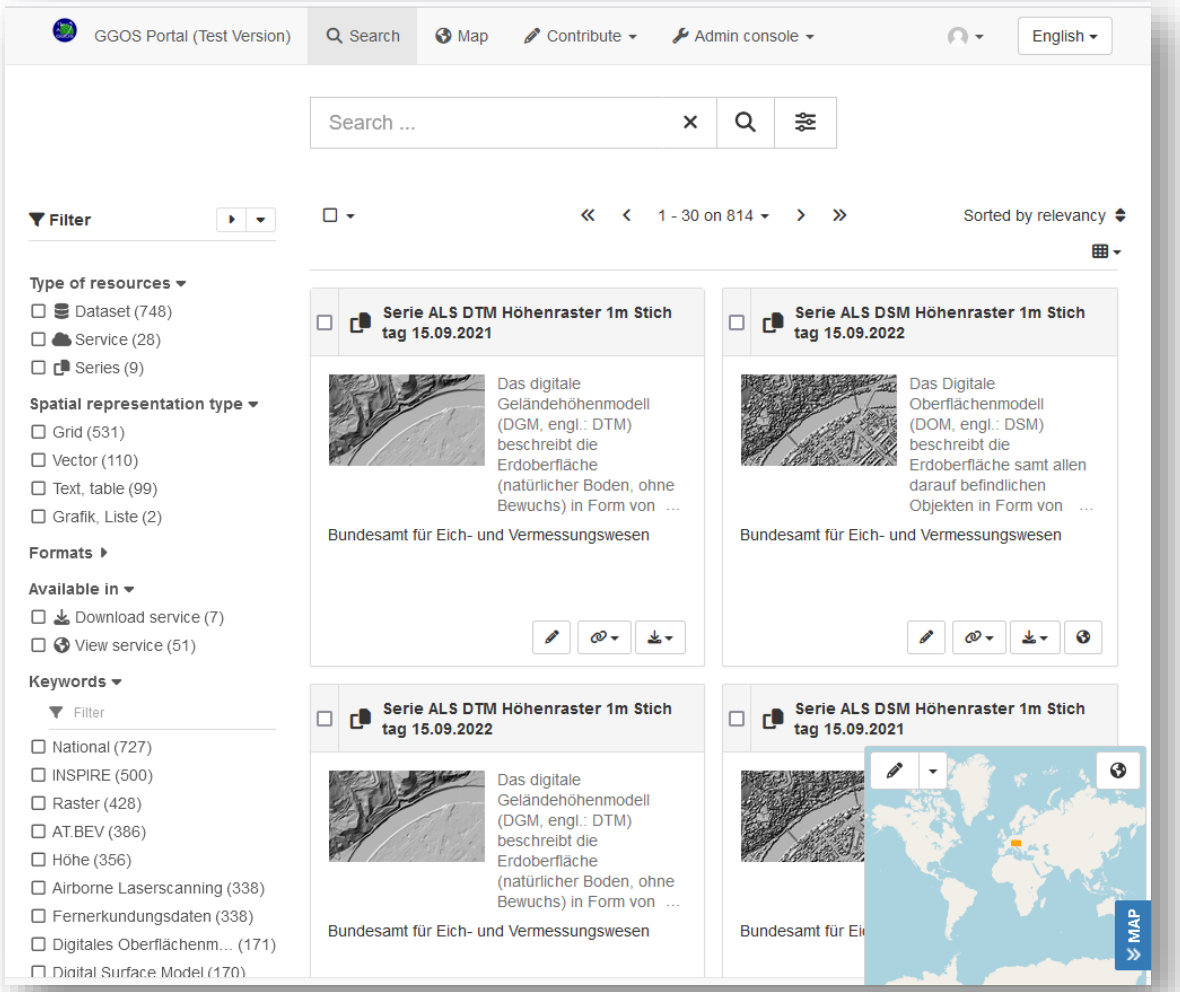
– Geospatial Extensions are partly outdated and no longer maintained

GeoNetwork opensource

\+ **Well established harvesting tools** for **geospatial data** -> easier to implement

\+ **Continuous further developments** -> Geonetwork UI & Microservices

➢ **Recommended software package**



GeoNetwork Search Surface (Initial tests with prototype for GGOS Portal)

RECOMMENDATIONS

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types of metadata provision	Readability		Accessibility		
	human	machine	HTML	File	API*
Text on website (HTML)	yes	x	yes	x	x
TXT (*.txt Sitelog)	yes	x	x	yes	x
XML (GeodesyML Sitelog)	yes	yes	x	yes	x
JSON	yes	yes	x	yes	x
Database (OAI-PMH,…)	x	yes	x	x	yes

*API – standardized interface to access web-database (e.g. OAI-PMH, RESTful, …)

Recommendations for **metadata provision:**

- ✓ **Format:** machine readable, like **XML**, **JSON** or **API** (database)
- ✓ **Interface: API** (OAI-PMH, RESTful, …) or **downloadable file** (XML, JSON)
- ✓ **Standard: ISO19139/19115** (GML), **DublinCore**

or **xsl Transformation file** to your standard or **new schema** (xsd file)

METADATA AVAILABILITY

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Global Geodetic Observing System

- Metadata information already available for a lot of geodetic data within IAG
- But a **majority not via machine readable format/interface**: orange and red

Best practise example

Metadataprovider	Format	Standard	Implementation	IERS	IGS	ILRS	IVS	IDS	PSMSL	ICGEM	IDEMS	IGETS	ISG	BGI	COST-G
GFZ Data Service	XML	ISO19139	OAI-PHM Harvester							+		+	+		~
BEV	XML	ISO19139	Geonetwork Harv												
NASA Earthdata	XML	ISO19115	XML File System Harv	~	+	+	+	+							
	JSON	Echo-API	Simple URL Harvester												
Datacite - DOI	XML	Datacite	XML File System Harv		*	*	*	*		+		+	+	*	+
			OAI-PHM Harvester												
	JSON	Datacite-API	Simple URL Harv												
Station Sitelog	XML	Geodesy ML	XML File System Harv		+	+	+								
	Sitelog	z.B. IGS													
IDEMS	XML	no standard	XML File System Harv								+				
CDDIS	HTML	no standard	no Harvester		+	+	+	+							
PSMSL Website	HTML	no standard	no Harvester						+						
IERS Website	HTML	no standard	no Harvester	+											

Implementation works

Metadata Standard not supported (XSL and/or XSD file missing)

No Implementation provided (HTML content cannot be harvested)

\+ Large amount of geodetic data with metadata

~ Small amount of geodetic data with metadata

* Little information in the metadata

Best Practise Example

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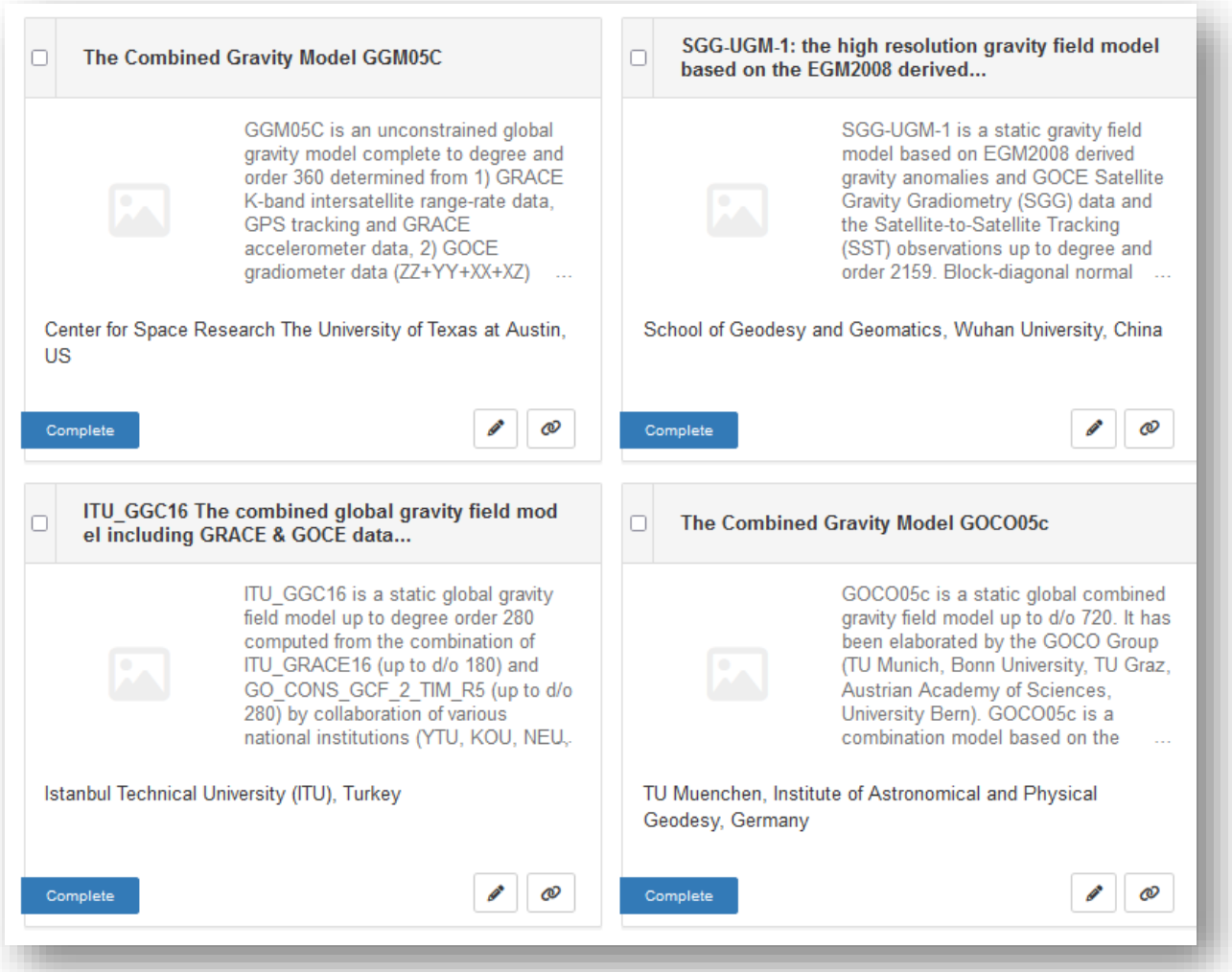
- **GFZ Data Service**
- Provision via **OAI-PHM** API interface:

Service	Records	Datasets
ICGEM	45	Global Gravity Field Model
ISG	66	Regional Gravity Models
IGETS	26	Gravimeter Data

GFZ Helmholtz Centre Potsdam

➢ **Easy to integrate into GeoNetwork**



Harvested metadata from GFZ Data Service with GeoNetwork (via OAI-PHM interface)

GGOS Portal – Future Realisation

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Start development in 2025

Strategy including IAG metadata:

1. **Include already available metadata** (machine-readable)
   - API Interface (OAI-PMH)
   - Downloadable files (XML, PMH)
2. **Release a first version** of GGOS Portal
3. **Encourage data provider** to create machine-readable metadata

Thank you for your attention!

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GGOS Portal

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